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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,692	06/23/2006	Henrik Sjoland	0110-058	9598

42015 7590 05/13/2009
POTOMAC PATENT GROUP PLLC
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EXAMINER	
HU, RUI MENG	

ART UNIT	PAPER NUMBER
2618	

NOTIFICATION DATE	DELIVERY MODE
05/13/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

tammy@ppglaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/549,692	SJOLAND ET AL.	
	Examiner	Art Unit	
	RuiMeng Hu	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-13,15 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-13,15 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 2, 4-13, 15 and 16 have been considered but are moot in view of the new ground(s) of rejection.

Response to Amendment

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1 and 16** are rejected under 35 U.S.C. 102(b) as being anticipated by **Walter et al. (US Patent 3624514).**

Consider **claim 1**, Walter et al. disclose a passive mixer 9 (figure 3, column 3 lines 1-19, Applicant fails to specifically define the terminology "passive" in claim 1, however applicant simply mentions "passive" in the preamble that does not positively define "mixing means" or limit the scope of claim structure wise, thus general definition of "passive" can be used, e.g. the mixer 9 passes a signal) for converting a first signal having a first frequency (figure 3, VHF) to a second signal having a second frequency (figure 3, IF signal), comprising: mixing means (elements 6-9 and 13-15), a first terminal (VHF), a second terminal (input terminal of high pass filter 15) and a third terminal (IF terminal), for providing the second signal (IF signal) by mixing a third signal (output of 15) having a third frequency provided as input at said second terminal (input terminal of

high pass filter 15) and the first signal (VHF) provided as input at either the first or the third terminal; and a feedback circuit (figure 3, low pass filter 14) operatively connected to said third terminal (IF terminal) and said second terminal (input terminal of high pass filter 15), wherein a signal path between the second terminal and the mixing means comprises a high pass filter (high pass filter 15), and the feedback circuit comprises a low pass filter (figure 3, low pass filter 14) that provides a linearizing effect on an output of the second signal (figure 3, filters 13-15 provide linearity).

Consider **claim 16 as applied to claim 1**, Walter et al. disclose wherein: said first signal (figure 3, VHF) is provided as input at said first terminal; said second signal (figure 3, IF signal) is supplied as output at said third terminal; said first frequency is a radio frequency (figure 3, VHF); and said second frequency is an intermediate frequency (figure 3, IF signal).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Suematsu (US Patent 6252469)** in view of **Aoyama et al. (US Patent 5517685).**

Consider **claim 1**, Suematsu discloses a mixer 122 (figure 9) for converting a first signal having a first frequency (figure 9, output of 121) to a second signal having a second frequency (figure 9, signal 55), comprising: mixing means (122), a first terminal (52), a second terminal (75) and a third terminal (55), for providing the second signal (output of 122) by mixing a third signal (output of 124) having a third frequency provided as input at said second terminal (75) and the first signal (52) provided as input at either the first or the third terminal; and a feedback circuit (figure 9, low pass filter 123) operatively connected to said third terminal (55) and said second terminal (75), wherein a signal path between the second terminal and the mixing means comprises a high pass filter (high pass filter 124), and the feedback circuit comprises a low pass filter

(figure 9, low pass filter 123) that provides a linearizing effect on an output of the second signal (figure 9, filters 123, 124 provide linearity).

However, Suematsu fails to mention mixer 122 is passive. In the same field of endeavor, Aoyama et al. disclose a passive mixer 48 (column 9 lines 19-31 and column 16 lines 12-25 show that the mixer 48 is a passive device, the PLL circuit can be constituted by only the passive devices).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques taught by Aoyama et al. into the art of Suematsu to use a passive mixer as an alternative embodiment.

8. **Claims 1, 2, 4-13, 15 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hoover (US Patent 4090139)** in view of **Vice (US Patent 5799248).**

Consider **claim 1**, Hoover discloses a passive mixer (FET mixer circuits, column 1 line 43-column 3 line 28) for converting a first signal having a first frequency (figure 1, E_IN2 which may be at a modulating frequency f2 is applied to the primary winding 14 of a transformer 16) to a second signal having a second frequency (The parallel resonant circuit 66 is tuned to one of the side-band frequencies f2 +f1 or f2 -f1 and an output signal at this frequency is available at the terminals of winding 68 which is coupled to coil 62), comprising: mixing means (the first and second COS/MOS pairs), a first terminal, a second terminal and a third terminal (figure 1), for providing the second signal by mixing a third signal (figure 1, E_IN1 which may be at a carrier frequency f1) having a third frequency provided as input at said second terminal and the first signal

(the modulating signal) provided as input at either the first or the third terminal; and a feedback circuit (figure 1, feedback circuit comprising capacitor 51 and resistor 72) operatively connected to said third and said second terminal (figure 1, E_OUT terminal and E_IN1 terminal), wherein the feedback circuit comprises a low pass filter that provides a linearizing effect on an output of the second signal (claim 15, figure 1, the low pass filter comprising capacitor 51 and resistor 72).

Hoover fails to specifically mention FET mixer circuits is passive. However, the teaching of a mixer comprising a passive FET is well known in the art. In the same field of endeavor, Vice discloses a passive mixer comprising a passive FET (title, abstract, column 2 lines 1-9, figures 1 and 5, FETs Q1 and Q2).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques taught by Vice into the art of Hoover as to modify the mixer circuit to have passive FETs to reduce levels of nonlinearity and inter-modulation distortion.

Hoover fails to mention a high pass filter to filter LO signal. In the same field of endeavor, Vice discloses in figure 1, a high pass filter 13 for filtering LO signal.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques taught by Vice into the art of Hoover as to include filter 13 for removing harmonics.

Consider **claim 2 as applied to claim 1**, Hoover as modified discloses wherein the feedback circuit is a bootstrap circuit (figure 1, the low pass filter comprising capacitor 69 and resistor 72).

Consider **claim 4 as applied to claim 1, claim 15 as applied to claim 1**, Hoover as modified discloses wherein the low pass filter comprises a capacitor 51 connected between said second terminal and said mixing means, and a resistor (Hoover, resistor 72) connected between said third terminal (E_out) and the connection between said capacitor and said mixing means (figure 1).

Consider **claim 5 as applied to claim 1**, Hoover as modified discloses wherein said mixing means is a voltage controlled switch (the FET mixer circuit has voltage controlled switch characteristics).

Consider **claim 6 as applied to claim 1**, Hoover as modified discloses wherein said mixing means comprises a FET transistor switch (figure 1, FET mixer) having either its drain or source operatively connected to said first terminal (figure 1), its gate operatively connected to said second terminal (figure 1, carrier signal port connected to the gates of the first COS/MOS pair), and either its source or drain operatively connected to said third terminal (figure 1, E_OUT terminal).

Consider **claim 7 as applied to claim 6**, Hoover as modified discloses characterized in that said FET transistor is an NMOS transistor (figure 1, N1, NMOS transistor).

Consider **claim 8 as applied to claim 1**, Hoover as modified discloses wherein the mixer is a balanced mixer comprising an even number of mixing means (figure 1 of Hoover, figure 3 of Vice).

Consider **claim 9 as applied to claim 1**, Hoover as modified discloses wherein the mixer is included in electronic equipment (the disclosed FET mixer circuits used for

converting a frequency signal together with a common-gate amplifier, such mixer can be used in a variety of electronic equipments).

Consider **claim 16 as applied to claim 1**, Hoover as modified discloses wherein: said first signal (figure 1, E_in2 = f_2) is provided as input at said first terminal; said second signal (figure 1, E_out) is supplied as output at said third terminal; said first frequency is a radio frequency (figure 1, E_in2 = f_2); and said second frequency is an intermediate frequency (figure 1, E_out).

Consider **claim 10 as applied to claim 9**, Hoover as modified fails to disclose wherein the electronic equipment is a portable communication equipment having a supply voltage of less than 2V.

However, the teaching of a portable communication device utilizing a mixer is well known in the art, and according to the reference specification, the mixer is capable of operating in a portable communication device having a supply voltage of less than 2V.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques into the art of Hoover as to utilize the mixer circuit in a portable communication device having a supply voltage of less than 2V.

Consider **claim 11 as applied to claim 9**, Hoover as modified fails to disclose wherein the electronic equipment is a mobile radio terminal, a mobile telephone, a pager, or a communicator.

However, the teaching of a mobile communication device utilizing a mixer is well known in the art, and according to the reference specification, the mixer is capable of operating in a mobile communication device.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques into the art of Hoover as to utilize the mixer circuit in a mobile communication device.

Consider **claim 12 as applied to claim 9**, Hoover as modified fails to disclose wherein the electronic equipment is adapted to operate in a wireless local area network.

However, the teaching of a wireless mobile communication device utilizing a mixer is well known in the art, and according to the reference specification, the mixer is capable of operating in a wireless mobile communication device.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques into the art of Hoover as to utilize the mixer circuit in a wireless mobile communication device.

Consider **claim 13 as applied to claim 9**, Hoover as modified fails to disclose wherein the electronic equipment is communication equipment adapted to provide short-range supplementary communication according to Bluetooth.RTM. technology.

However, the teaching of a Bluetooth device utilizing a mixer is well known in the art, and according to the reference specification, the mixer is capable of operating in such device.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the selection techniques into the art of Hoover as to utilize the mixer circuit in a Bluetooth device.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building

401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RuiMeng Hu whose telephone number is 571-270-1105. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/RuiMeng Hu/
R.H./rh
May 6, 2009

/Lana N. Le/
Primary Examiner, Art Unit 2614